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# Evaluation study : on the new mode of enhanced home & community care service provided by Hong Kong Family Welfare Society

Asia-Pacific Institute of Ageing Studies, Lingnan University

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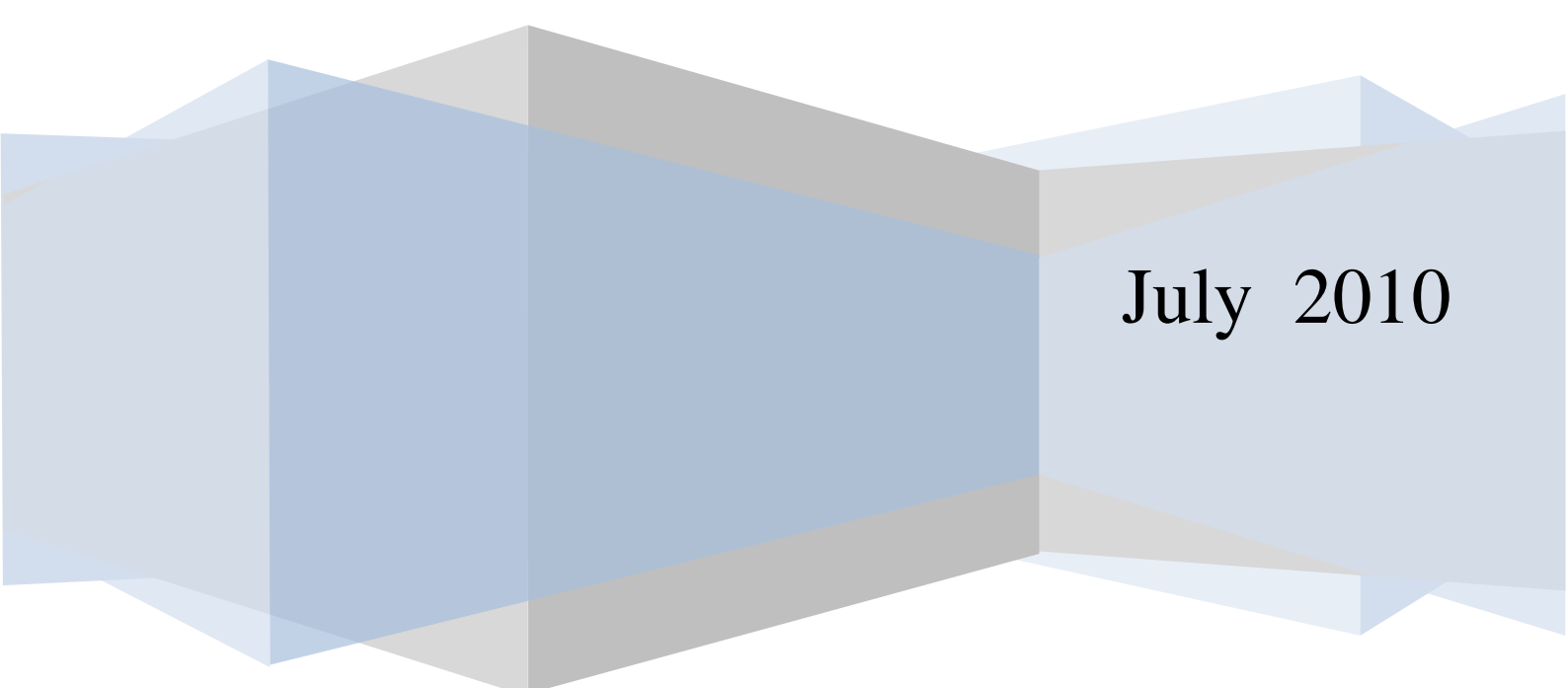
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**Asia-Pacific Institute of Ageing Studies  
Lingnan University**

# **Evaluation Study**

**On the New Mode of Enhanced Home & Community Care Service  
Provided by Hong Kong Family Welfare Society**



**July 2010**

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# **Chapter 1 :: Introduction**

## 1.1 Background of the research

The Enhanced Home and Community Care Services (EHCCS) was introduced in 2001 in Hong Kong by the Social Welfare Department (SWD) to enable “Ageing in Place” and “Continuum of Care”. The program has been designed as an integrated form of services provided to frail older person with the aims to deliver a wide range of nursing and care services at home on a regular and sustainable basis to enable older persons, who suffer from a moderate level of impairment, to continue to live at home and to maintain their maximum levels of functioning. EHCCS also provide support for carers to strengthen family cohesion.

Starting from April 2001, the Social Welfare Department has been granting subsidy to non-governmental organizations (NGOs) to run the EHCCS according to set standards and requirements in the 18 District Council districts. Hong Kong Family Welfare Society (HKFWS), a charitable non-governmental social welfare organization established in 1949, has been operating 1.3 teams EHCCS on Hong Kong Island and in Kwun Tong since (which year). In 2005, HKFWS successfully bided 3 teams of EHCCS, serving elders in Tsuen Wan, Kwun Tong and Hong Kong Island. Until now, HKFWS is serving 450 frail elders under EHCCS.

The scope of EHCCS covers care management, basic and special nursing care, personal care, rehabilitation exercise, day care services, carer support services, day respite service, counseling services, 24-hour emergency support, environmental risk assessment and home modifications, home-making and meal delivery services and transportation and escort services<sup>1</sup>. NGOs provide a spectrum of these services to each elder based on their individual needs according to the results of their comprehensive assessments on a number of aspects, including physical, cognitive, social factors, etc.

Every NGO has its own method of service implementation to meet the requirements stipulated in the Funding Service Agreement (FSA) with the Social Welfare Department. HKFWS based on the existing service mode of EHCCS and proposed a new mode with the addition of group rehabilitation component to EHCCS as a more effective intervention in health maintenance and improvement. In order to evaluate the effectiveness of the new mode of EHCCS and compare it with the existing service mode, an evaluation study was carried out to measure the performances and changes in elders in both service modes.

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<sup>1</sup> Leaflet on Enhanced Home and Community Care Services, Social Welfare Department, HKSAR Government, 2007.

The Study was conducted under the collaboration of Hong Kong Family Welfare Society and the Asia-Pacific Institute of Ageing Studies (APIAS). believed that the results will provide valuable information about the effectiveness of the service.

## 1.2 Organization of the report

The report is divided into five chapters.

Chapter 1 will introduce the background and the objectives of the Study. Chapter 2 is the literature review, beginning with the ageing situation and the long-term care policies and development of Hong Kong, findings of local studies on the effectiveness of home care services in Hong Kong, and finally the key aspects for measuring performances of elders and the instruments in use, Chapter 3 is the research methodology, outlining the research design, method used, the data collection process, data processing and analysis. Chapter 4 is the research findings, showing the performances on key aspects of EHCCS recipients using the new mode, and also the comparison to those who were using the service without the day-care component. Chapter 5 is the conclusion and recommendations. Appendices and references will appear at last.

## 1.3 Objectives of the research

HKFWS based on the existing mode of service of EHCCS and proposed a new mode with the addition of group rehabilitation component (details of the two modes of services are provided in Chapter 3), aimed to further enhance clients' levels in physical functioning, cognitive functioning, ability in carrying out activities of daily living, psychological condition, quality of life, social engagement and self-efficacy. The specific objectives of the research are:

- (1) To validate the effectiveness of the new service mode of EHCCS in maintaining and improving condition in the aforementioned aspects
- (2) To compare the effectiveness of the new service mode of EHCCS with the existing service mode of EHCCS in maintaining and improving condition in the aforementioned aspects.

# **Chapter 2 :: Literature Review**



## 2.1 Demographic ageing in Hong Kong

According to the Census and Statistic Department, Hong Kong's population has already reached 7 million by the end of 2009, an increase of 0.5% over that in 2008. The population of Hong Kong has undergone not only an increase in size over the past decades, but also drastic changes in its composition, particularly in terms of the age profile. More specifically, the proportion of old people is increasing substantially and rapidly, resulting in a corresponding increase in the median age of our population and a higher elderly dependency ratio. According to the Census and Statistic Department, over the past decades (i.e. from 1961 to end of 2009), the elderly population has increased by more than 80,000 or at an average annual growth rate of about 5%. By the end of 2009, there were some 90,700 elderly persons (i.e. those aged 65 and above) in Hong Kong, accounting for about 13% of our population. The ageing trend is expected to continue in the foreseeable future. The size of the population aged under 15 has fallen significantly, thanks to the persistent reduction in the fertility rate. On the other hand, the proportion of elderly people has increased from 10.8% by the end of 1999 to 12.9% by the end of 2009. The media age of the population also rose from 36 by the end of 1999 to 41 by the end of 2009. With the advancement of the medical services and better health consciousness, we can reasonably expect people to live longer than before. The life expectancy at birth for male and female has risen from 77.7 and 83.2 in 1999 to 79.8 and 86.1 in 2009 respectively.

## 2.2 Long-term care policies and development of Hong Kong

As in most of the western countries, long-term care (LTC) in Hong Kong is developed along two main streams: residential care, and home-and-community-based care. Under the initiatives for “ageing in place” and “community care”, older persons in Hong Kong are encouraged to live in their homes for as long as possible, assisted by community support services when needed.

### 2.2.1 Residential care services

The service objectives are to provide residential care and facilities for those who, for health, social and other reasons, are unable to live at home and provide assistance in their daily living according to their varying personal care needs. Residential care can be classified according to the nature and level of care it provides:

Service Types	Service Provided	Capacities (as at 31 March 2009)
Hostel for the Elderly	To provide communal living accommodation, various programs and care to elderly persons who are capable of self self-care, and yet require support and guidance in daily living activities	39 Subvented: 24 Self-financing: 15
Home for the Aged	To provide residential care, meals, laundry service, a limited degree of assistance in activities of daily living, and social activities for elderly persons who are unable to live independently in the community. However, they are not dependent on assistance with personal or nursing care.	1,891 Subvented: 672 Self-financing: 1,219
Care-and-attention Home	To provide residential care, meals, personal care and limited nursing care for the elders who suffer from poor health or physical/mild mental disabilities with deficiency in activities of daily living.	23,640 Subvented: 14,375 Self-financing: 2,644 Bought place & enhanced bought place: 6,621
Nursing Home	To provide residential care, personal care, medical and nursing care to the elders who, as a result of deterioration in their health condition, cannot be adequately cared for in care-and-attention homes	2,986 Subvented: 2,086 Self-financing: 900
Residential Respite Service	To provide temporary or short-term residential care service for the elders. It serves the objectives of providing temporary relief to family members or relatives who are the main carers of elders requiring a certain degree of personal care whilst resident in normal environment within the community.	11 places at 11 homes, and casual temporary vacant places at residential homes
Emergency Placement Service	To provide temporary shelter for the elders in urgent need of accommodation and care.	65 places at 23 homes

### 2.2.2 Home-and-community-based care services

The service objective is to assist elderly persons to remaining living in the community for as long as possible. These services also give support to carers. With increasing diversity of home-and-community-care services for the elderly, a more integrated approach to facilitate access to services will be adopted.

Service Types	Service Provided	Capacities (as at 31 March 2009)
Neighborhood Elderly Center	NEC is a type of community support services at neighborhood level which provides a range of comprehensive services to cater for the psycho-social and developmental needs of both healthy and mildly frail elders, including, educational and developmental activities, volunteer development, carer support service, counseling service, reaching out and networking, social and recreation activities, meal service, drop-in service, information and referral centre on community resources	115
Social Center for the Elderly	Social Centers for the Elderly organize social and recreational activities for elders in the community and to provide information regarding welfare services for the elders and referral to appropriate services.	57
District Elderly Community Center	DECC is a type of community support services at district level to enable elders to remain in the community, to lead a healthy, respectful and dignified life, to enhance their positive and contributing role and to involve the public to build up a caring community. DECC provides services including community education, case management, support team for the elderly, health education, educational and developmental activities, information and referral centre on community resources, volunteer development, carer support services, social and recreational activities, meal and laundry services, drop-in service.	41
Support Team for the Elderly	To reach out to single and needy elderly and provide them with social networking and support service; encourage volunteers to visit and assist single elderly.	41

<p>Day Care Center for the Elderly</p>	<p>Day Care Centers for the Elderly provide a range of centre-based care and support services during daytime to enable the frail and demented elders suffering from moderate or severe level of impairment to maintain their optimal level of functioning, develop their potential, improve their quality of life and to enable them to live in their own homes wherever feasible and possible. Services provided by Day Care Centre includes nursing care, rehabilitation training, health education, carer support services, day respite service, counselling and referral services, social and recreational activities, meal, transportation service.</p>	<p>58 (2,234 service quota, 08-09 revised estimate)</p>
<p>Integrated Home Care Service Team</p>	<p>Integrated home care services aims at providing difference kinds of care and services to the elders, the disabled, individuals and families with social need. Services for frail cases The Integrated Home Care Services Teams (IHCSTs) should address individual service users' health concerns and corresponding needs by applying a multi-disciplinary approach including nursing care, personal care, rehabilitative service and social work service etc. A planned and well co-ordinated package of home care and community care service tailor-made for individual service user according to their frailty and disability. Services for ordinary cases including Personal care / simple nursing care service, general household or domestic duties, escort service Child-minding, home respite service health/safety, urchase and delivery of daily necessities, provision of meals and laundry service.</p>	<p>60 (28,600 service quota, 08-09 revised estimate)</p>
<p>Enhanced Home and Community Care Services</p>	<p>To provide enhanced day and community care services to frail people suffered from moderate level of impairment, meet their nursing and care needs and provide support to their carers. The services including care management, basic and special nursing care, personal care, rehabilitation exercises, centre-based day services, carer support services, respite service, out-of-hour emergency support, environmental risk assessment and home modifications, home-making service, provision of meals, transportation and escort service</p>	<p>24 (3,700 service quota, 08-09 revised estimate)</p>

<p style="text-align: center;">Holiday Center for the Elderly</p>	<p>To provide holiday facilities in the countryside for elderly people (including those who need care-and-attention service) to take a rest and to enjoy pastime with their families and friends.</p>	<p style="text-align: center;">1</p>
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Home and community care has grown into an important model of health care, especially for older adults, who represent a significant proportion of the health care recipients. Under the now widespread directives for “ageing in place” and “community care,” older persons are encouraged to stay living in their homes for as long as possible, assisted with community support services when needs arise. Enhanced Home and Community Care Services (EHCCS) constitute integrated services from doctors, nurses, physiotherapists, occupational therapists, social workers and allied health workers dedicated to provide intensive home and community-based care to the frail elderly. The majority of EHCCS users suffer from chronic illness due to wide range of medical and surgical problems, which leads to moderate levels of disability. They generally need appropriate support by nursing and allied health services to continue to live at home. On top of the care services provided at users’ homes, HKFWS extended EHCCS at the day care center. Users thus benefit from a full swing of health care and social care services available.

With the expectation of the future older population being older (and possibly frailer) and more demanding (due mainly to rising income and educational levels), community support services will mean higher level of skills matched with individual needs and preferences, preferably provided on demand, often around the clock. However, such provision has to incorporate a more structured approach in order to reduce the burden on institutional care in the long run.

2.3 The key aspects of measuring performance and the instruments in use

The new mode of EHCCS proposed by HKFWS offers a spectrum of services, which are likely to sustain or advance older service users’ functional ability with a longer and wider use of the services. The eight componential services – (a) home nursing services, (b) day care center nursing services, (c) home physiotherapies, (d) day care center physiotherapies, (e) home occupational therapies, (f) day care center occupational therapies, (g) group activities at day care center, and (h) nursing talks and training about nursing – are believed to be able in promoting older users’ functional abilities individually and/or synergistically.

The study specifies the following key aspects for testing the new mode of service:

### 2.3.1 Physical Functioning

The study evaluates the therapeutic effect of the rehabilitation program by assessing the general physical conditions, including the general strength of upper extremities, lower extremities, and balance and general mobility. The assessment tools used included: Five Times Sit To Stand Test, Time Get Up and Go Test, Hand Grip Strength Test on dominant hand, Sollerman Hand Function Test, and the Elderly Mobility Scale.

These tools have been commonly used as physical frailty indicators for measuring strength, balance and mobility in elderly<sup>2</sup>. They are functional orientated, objective, easy-to-administer and convenient to carry out.

#### i. Five Times Sit To Stand Test

The measurement tool is a functional strength test, using body weight for resistance during functional task, to assess the lower extremities strength. It is also a practical alternative to manual muscle testing<sup>3</sup>. Sit To Stand is almost performed daily by active people, and if this ability is impaired, it would result in significant functional limitation. The ability to stand from a sitting posture or vice versa is a crucial factor in independence in elderly living in community<sup>4</sup>. Five Times Sit To Stand test has been broadly applied as a functional strength test for lower extremities in many researches<sup>5</sup>. It is functional orientated and easy to carry out in home setting. It has also been used for multiple purposes, including as an indicator of postural control, fall risk, lower-extremity strength, and

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<sup>2</sup> Ramon Daniels, Erik van Rossum, Luc de Witte, Gertrudis IJM Kempen<sup>4</sup> and Wim van den Heuvel<sup>4</sup>. (2008). Interventions to prevent disability in frail community-dwelling elderly: a systematic review. *BMC Health Services Research* 8:278

<sup>3</sup> Bohannon RW.(1995). Sit-to-stand test for measuring performance of lower extremity muscles. *Perceptual & Motor Skills*. 80(1):163-6

Csuka M. McCarty DJ.(1985). Simple method for measurement of lower extremity muscle strength. *American Journal of Medicine*. 78(1):77-81,

Y. Netz, M.Ayalon, A. Dunskey and N. Alexander. (2004). The multiple sit-to-stand field test for older adults: what does it measure? *Journal of Gerontology* 50: 121–126

<sup>4</sup> Ampbell AJ, Borrie MJ. Spears GF. Risk factor for falls in a community-based prospective study of people 70 years and older. *Journal of Gerontology*. 1989;44: M112-M117

<sup>5</sup> R.W. Bohannon. (2006). Reference values for the five-repetition sit-to-stand test: A descriptive meta-analysis of data from elders, *Percept Motor Skills* 103: 215–222)

proprioception and as a measure of disability. The Sit-to-Stand Test has been related to standing and postural control and to falls in older adults<sup>6</sup>.

ii. Timed Get Up and Go Test

The measurement tool is commonly used to assess motor function<sup>7</sup>, posture control<sup>8</sup>, risk of fall<sup>9</sup> and efficacy of intervention in elderly<sup>10</sup>. Podsiadlo D et al<sup>11</sup> suggested that the Timed Get Up and Go Test is a reliable and valid test for assessing the basic functional mobility and quantifying the locomotion performance in elderly, and may also be useful in following clinical change over time. The test measures speed during several functional maneuvers, which include standing up, walking, turning and sitting down. Limited training and equipment are required, and the test is therefore convenient in clinical settings.

iii. Hand Grip Strength Test

The measurement tool is a simple measure and has been used by many researchers as an indicator as well as a predictor of old age disability. It is also an indicator of nutritional status and physical function and muscular strength and mortality<sup>12</sup>. In time of aging, both muscle mass and strength would be reduced. This phenomenon is called sarcopenia. The reduction in strength would affect both the mobility, quality of life of the elderly.

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<sup>6</sup> Susan L Whitney, Diane M Wrisley, Gregory F Marchetti, Michael A Gee, Mark S Redfern, Joseph M Furman(2005).. Clinical Measurement of Sit-to-Stand Performance in People With Balance Disorders: Validity of Data for the Five-Times-Sit-to-Stand Test .Physical Therapy . Volume 85 . Number 10 .

<sup>7</sup> Newton RA. (1997). Balance screening of an inner city older adult population. Arch Phys Med Rehabil. 78: 587-591

Bischoff HA, Stahelin HB, Monsch AU, et al. (2003). Identifying a cut-off point for normal mobility: a comparison of the timed up and go test in community-dwelling and institutionalized elderly women. Age Ageing. 32:315-320

<sup>8</sup> Richard W Bohannon.(2006). Reference Values for the Timed Up and Go Test: A Descriptive Meta-Analysis. Journal of Geriatric Physical Therapy; 29, 2; ProQuest Health and Medical Complete pg. 64

<sup>9</sup> Salgado R, Lord SR, Packer J, Ehrlich F. (1994). Factors associated with falling in elderly hospital patients. Gerontology. 40: 325-331

Whitney JC, Lord SR, Close JC. (2005). Streamlining assessment and intervention in a falls clinic using the Timed Up and Go test and physiological profile assessment. Age Ageing. 24:567-71

<sup>10</sup> Sousa N, Sampaio J. ( 2005). Effects of progressive strength training on the performance of the Functional Reach Test and the Timed Get Up and Go test in an elderly population from the rural North of Portugal. Am J Hum boil. 17:746-751

<sup>11</sup> Podsiadlo D. Richardson S.(1991). The timed "Up & Go": a test of basic functional mobility for frail elderly persons. Journal of the American Geriatrics Society. 39(2):142-8

<sup>12</sup> Bohannon RW (1998).Hand-grip dynamometry provides a valid indication of upper extremity strength impairment in home care patients. Journal of Hand Therapy. 11(4):258-60, Oct-Dec

Research has shown that strength training would provide benefit to elderly<sup>13</sup>. Besides improving the strength performance in the elderly, strength training would improve the quality of life of the elderly<sup>14</sup>.

iv. Sollerman Hand Function Test

The measurement tool is used to assess the hand function of client in different daily tasks, especially for task required fine motor control and coordination of both hands. The standardized hand function test based on seven of the eight most common hand grips is reported. There are 17 unilateral and 3 bilateral (a total of 20) activities of daily living included in the assessment.

v. Elderly Mobility Scale

The measurement tool is devised to assess mobility in frail, elderly people, and contains seven items considered essential for performing the basic activities of daily living. These items include transfer, gait, and balance tasks. Each item score is summed to provide a total possible score from 0 to the maximum score of 20 which represents independent mobility<sup>15</sup>. The scale was in 1994, it had been tested to have good reliability and validity for hospital patients over 55 years old<sup>16</sup>, which has been widely used as a standardized assessment tools for basic mobility in elderly in different settings<sup>17</sup>.

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<sup>13</sup> Seguin, R. & Nelson, M. E. (2003). The Benefits of Strength training of older adults. *American Journal of Preventive Medicine*, 25 (3Sii), 142-149

<sup>14</sup> Justine, M., Hamid, T. A. & Kamalden, T. F. (2010). A Multicomponent Exercise Program's Effects on Health-Related Quality of Life of Institutionalized Elderly. *Topics in Geriatric Rehabilitation*, 26 (1), 70-79

<sup>15</sup> Joanne Stacey Nolan, BappSc, MappSc. Lucinda Elaine Remiltoon, BP hysio(Hons), Margaret Mary Green, MappSc.(2008). The Reliability and Validity of the Elderly Mobility Scale in the Acute Hospital Setting. *The Internet Journal of Allied Health Sciences and Practice*. 6 (4)

Smith R. (1994). Validation and reliability of the Elderly Mobility Scale. *Physiotherapy*. 80:744-747.

<sup>16</sup> Smith R. (1994). Validation and reliability of the Elderly Mobility Scale. *Physiotherapy*. 80: 744-747.

Prosser L, Canby A. Further validation of the Elderly Mobility Scale for measurement of mobility of hospitalized elderly people. *Clin Rehabil* 1997; **11**:338-43.

Joanne Stacey Nolan, Lucinda Elaine Remiltoon, Margaret Mary Green.(2008). The reliability and validity of the Elderly Mobility Scale in the Acute Hospital Setting. *The Internet Journal of Allied Health Sciences and Practice*, Vol 6.

<sup>17</sup> Joanne Stacey Nolan, Lucinda Elaine Remiltoon, Margaret Mary Green. (2008). The reliability and validity of the Elderly Mobility Scale in the Acute Hospital Setting. *The Internet Journal of Allied Health Sciences and Practice*, Vol 6

S F Wong, K B Yap, K M Chan. (1998). Day Hospital Rehabilitation for the Elderly: A Retrospective Study. *Ann Acad Med Singapore*, 27:468-73



### 2.3.2 Cognitive Functioning

Cognitive ability is one of the major aspects for improvement under the realm of EHCCS, given its prevalence among the elderly population in Hong Kong. Cognitive function will greatly affect elders' functional performances in daily livings and also caregivers' burden.

#### Dementia Rating Scale

The measurement tool is widely used in the United States, while a Chinese version (CDRS) is developed based on the original and incorporated with cultural considerations. The measurement tool has 36 tasks in total, with 5 subscales articulating different cognitive domains, namely, (1) attention, (2) initiation/preservation, (3) construction, (4) conceptualization, and (5) memory. Compared with MMSE, CDRS provides additional and more refined details of elderly cognitive functions. It also has the merit of being more sensitive to detect early dementia or severely demented elderly and lesser ceiling or floor effect than MMSE.

### 2.3.3 Daily Living Skills

Given the objective of EHCCS is to enable elders to live in the community by maintaining the maximum level of functioning. Ability for Activities for daily living is one of major aspects to reflect whether elders are suitable to live at home and whether the service provider can keep the client in community to meet the objective of EHCCS.

#### Barthel Index (BI)

Modified Barthel Index<sup>18</sup> was chosen to measure the performance in basic Activities for Daily Living (ADL), as it was one of well known ADL assessments used on elders and it was widely use in medical field. The scale included 10 items: feeding, grooming, bed/chair transfer, toileting, bathing ambulation, ascend and descend stair, dressing, bowel control and bladder control. Each item is weighted differently and reflects the importance of each type of disability in terms of assistance required (Mahoney, 1965) and divided

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<sup>18</sup> Mahoney, F. I., & Barthel, D. W. (1965). Functional evaluation: The barthel index.

into 5 categories: totally independence (100), minimum dependence (91-99), moderate dependence (61-90), serve dependence (21-60), totally dependence. The higher marks mean the subject has higher degree of independence so as to he/she has greater ability to live at home.

#### 2.3.4 Psychological well-being

Group rehabilitative activity is one of the major traits of the new mode of service, it is believed that the synergy not only will promote physical well-being of elders, but also bring about a mental uplift, thus making a positive effect on mental well-being and satisfaction toward life.

##### i. Geriatric Depression Scale (GDS)

The measurement tool is designed for the elderly with careful consideration of special characteristics of depression on the elderly. The scale is commonly used as a routine part of a comprehensive geriatric assessment and it was widely use in medical and social service field. As the Short Form took an average of five to seven minutes to complete, simply by answering “yes” or “no” to the questions set out, it is therefore especially useful for the EHCCS users who are mostly physically ill and slightly demented thus are more likely to feel tired and usually limited in their concentration.

##### ii. Hong Kong Quality of Life for Elders Scale (HKQoLES)

The measurement tool is developed in 2002, based on World Health Organization’s Quality of Life Scale and incorporated with Chinese cultural perspectives in defining quality of life. There are six subscales, namely, (1) subjective well-being, (2) health, (3) interpersonal relations, (4) achievement-recognition, (5) finance, and (6) living condition. Users are asked to rate against each item set out under the 6 different domains, and the scores combined will signify elders’ satisfaction toward lives.

#### 2.3.5 Self-Efficacy

Self-efficacy refers to one’s capability of performing in certain manner (such as confidence, drive, motivation, problem-solving and etc) when attaining

certain goals. This is believed to be one of the major aspects for improvement under the new mode of EHCCS.

i. General Self-Efficacy Scale (GSES)

The measurement tool is designed to assess optimistic self-beliefs to cope with a variety of difficult demands in life. It is to measure the general situation of an elder in all different aspects. The tool consists of 10 psychometric items, users will be asked to rated against each item – how much do you agree – on a 4-point scale.

2.3.6 Carers' Stress Level

On top of providing care services to users at their homes and in day care centers, EHCCS is also dedicated to offer support to carers by equipping them with knowledge and skills on caring and by sharing the physical burden.

i. Carers' Strain Index

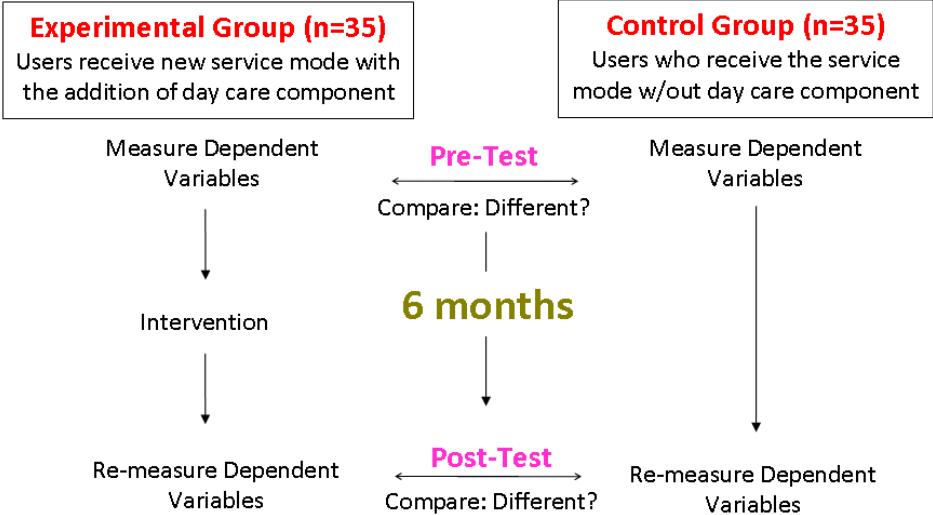
The measurement tool is designed to tap carers' stress level. Carers of users are asked to rate against the items set out in the questionnaire – how often they feel that way – on three levels “always” (1 point), “sometimes” (1 point) and “never” (0 point). The scores added up to a composite score indicating the stress level of carers.

# **Chapter 3 :: Research Methodology**

3.1 Research Design

Quasi-intervention design is commonly used in program evaluation, in which intervention group completers were compared with a matched comparison group that did not receive the intervention, in which subjects were randomly assigned to an intervention or comparison group. In this study, random assignment was not used because not every EHCCS user is physically and mentally fit for the proposed design, also to consider their wills to participate in day care activities. Therefore, random assignment to treatment was not possible in the setting. The intervention group received the new service mode of EHCCS and the comparison group received existing mode EHCCS without day-care component.

Figure 1: Research Design



3.1.1 Inclusion/Exclusion Criteria

The users are either existing or newly admitted EHCC users and live in the program’s defined geographical catchment area (Tsuen Wan and Kwun Tong). All users spoke Cantonese and had never received Day Care Service.

The assignment to intervention or comparison group was predetermined by EHCCS team of HKFWS, based on the inclusion criteria on three aspects (i.e. cognitive level, activity of daily living ability and mobility status) jointly agreed by the research team:

a. Cognitive Level

Services users have to score 10 or higher in Minimum Mental State Examination (MMSE).

b. Activities for daily living ability

Services users have to score 61 or higher in Barthel Index (BI).

c. Mobility status

Services users have to be classified Category IV or above in Modified Functional Ambulation Category (MFAC).

For the following conditions, users would be excluded from the study even if they complied with the above inclusion criteria:

a. Recent cardiac attack within one month

b. Past history of myocardial infarction

c. Other unstable medical condition

d. Incapability to follow command

### 3.1.2 Sampling

A total of 70 service users were selected as research targets. The HKFWS managers concerned and the representatives of the research team jointly assessed the participants' eligibility and suitability for the program. Following baseline measurements, the subjects were assigned to the intervention (n=35) and comparison (n=35) groups. Subjects in the intervention group will be referred to participate in the new mode of EHCCS (Daycare and EHCCS) at one of the respective Home Care Center in groups of 8 to 10 persons beside the sole EHCC home-based treatment, while the comparison group receives existing home-based EHCCS without day-care component.

### 3.1.3 Pairing Criteria

For the purpose of more detailed comparison and even distribution of data performance, every users admitted to the intervention group was paired individually with a user from comparison group of similar conditions in 4 areas:

a. The time period of receiving EHCCS

To pair existing users from intervention and comparison group, both of them should have received the EHCCS service for a similar period of time (no more than 2-month difference in between). For new user who was assigned to intervention group, they had to be matched with another newly admitted EHCCS user from comparison group as well

b. The Bandings of Mini-Mental State Examination (MMSE)

Subjects were matched with reference to their cognitive level, the MMSE performance of intervention and comparison subjects must belong to the same banding.

Table (a): Pairing Criteria – MMSE Bandings

Test	Score	Bandings
Mini-Mental State Examination (MMSE)	24-30	normal
	19-23	mild impairment
	10-18	moderate impairment
	0-9	severe impairment

c. The Bandings of Barthel Index Scores

Users were also matched with reference to the activities for daily living ability, the rating in Barthel Index (BI) of intervention and comparison subjects must belong to the same banding.

Table (b): Pairing Criteria – BI Bandings

Test	Score	Bandings
Barthel Index (BI)	100	independence
	91-99	mild dependence
	61-90	moderate dependence
	21-60	severe dependence
	0 -20	totally dependence

d. The Categories of Modified Functional Ambulation Category (MFAC)

Users were also matched with reference to their mobility level as well, the paired users from intervention and comparison group must belong to the same categories under Modified Functional Ambulation Category (MFAC).

Table (c): Pairing Criteria – MFAC Categories

Test	Categories
Modified Functional Ambulation Category (MFAC)	Category VII Outdoor Walker
	Category VI Indoor Walker
	Category V Supervised Walker
	Category IV Assisted Walker
	Category III Dependent walker
	Category II Sitter
	Category I Lyer

3.1.4 Content of intervention

a. Existing service mode of EHCCS of HKFWS

The existing service mode of EHCCS of HKFWS was characterized by two weekly home visits by a home care assistant (HCA). The two weekly one-hour sessions composed of two components: nursing care and exercise. The HCA would first tap subjects' vital signs such as blood pressure, pulse and etc before proceeding to the exercise program prescribed by physiotherapists (PT) and occupational therapists (OT) of EHCCS team. Professional workers such as registered nurse (RN), physiotherapist (PT)



and occupational therapist (OT) would visit the service user at home at least one time every six months for the sake of examining their progresses and conditions; and reviewing their care plan to better suit users' needs and conditions.

Figure 2: Details of existing service mode of EHCCS –  
A Weekly Schedule

<b>Home-based Care Service</b>		
Type of Treatment	Nursing Care Program	Exercise Program
Perform by	<b>1 Home Care Assistant</b>	
Tasks	<ul style="list-style-type: none"> <li>– <b>Vital signs checking</b> <ul style="list-style-type: none"> <li>– Blood pressure measurement</li> <li>– Pulse measurement</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>– <b>Restorative exercise</b></li> <li>– <b>Cognitive training</b></li> <li>– <b>Training on Activity of Daily Living (ADL)</b></li> </ul>
Treatment time (hr)	<b>0.25 x 2 times</b>	<b>0.75 x 2 times</b>
Total service hr/wk	<b>2</b>	

b. New service mode of EHCCS of HKFWS

The new service mode of EHCCS of HKFWS was characterized by one one-hour home visit by a home care assistant (HCA) and one four-hour day care training session in the day care center. Same as the home visit in existing service mode, the one-hour home visit composed of two components: nursing care and exercise. The HCA would first tap users' vital signs such as blood pressure, pulse and etc before proceeding to the exercise program prescribed by physiotherapists (PT) and occupational therapists (OT) of EHCCS team of HKFWS. The newly added four-hour day-care session consisted of vital signs checking (0.5 hour), rehabilitative exercise (1.5 hours), cognitive training and activity (1.5 hours) and lunch was also provided as part of the feeding assessment (0.5 hour). The 4-hour session was conducted by three HCAs, three program workers (PW), one registered nurse (RN), one physiotherapist (PT) and one occupational therapist (OT) to a group of 10 service users. Professional workers such as registered nurse (RN), physiotherapist (PT) and occupational therapist (OT) would still visit the service user at home at least one time every three

months for the sake of examining their progresses and conditions; and reviewing their care plan to cater for users' needs and conditions.

Figure 3 : Details of new service mode of EHCCS –  
A Weekly Schedule

	Home-based Care Service		Day Care Service		
Treatment Type	Nursing Care Program	Exercise Program	Nursing Care	Exercise	Exercise
Perform by	1 HCA		1 RN	1 PT	1 OT
Tasks	Blood pressure measurement Pulse measurement	Restorative exercise Cognitive training Training on Activity of Daily Living (ADL)	Vital signs checking	Rehabilitative Exercise	Feeding Assessment Cognitive training & games
Treatment time (hr)	0.25 x 1 time	0.75 x 1 time	0.5	1.5	2
Total service hr/wk	<b>1</b>		<b>4</b>		

Suggest to add the items of no. of service users served, nature of setting (home-based vs home-based cum centre-based training, individual vs group training) into the table for easy grasp of all the differences?

c. New service mode VS existing service mode of EHCCS of HKFWS

The new service mode made up of one one-hour home-based care services and one four-hour session of treatment in day care center. One of the two home visits by HCA in the existing service mode was replaced by the four-hour session in the day care center. The new service mode not only had increased the service hour per week by 3 hours, but also provided an environment that encouraged social interaction among elders during the treatment session which was believed to be a good motivator for improvement for service users.

3.1.5 Implementation

Users from intervention group received the new service mode for 6 months as the intervention, while users from comparison group continued with the existing service mode of EHCCS of HKFWS.

### 3.2 Methods

The current study adhered mainly to quantitative research methodology for measuring the effectiveness and impacts of the new service mode of EHCCS.

### 3.3 Data Collection and Processing

Data collection began in May 2009 till June 2010. Baseline performance of intervention and comparison groups' users were first measured before implementing the intervention and admitting to the study respectively, while the second measurement of performances was taken six months later in order to find the difference in outcome measures between the two time trends.

The evaluation of the new service mode for EHCCS of HKFWS was based on the improvement in seven aspects in intervention subjects, namely physical functioning, cognitive functioning, activities of daily living ability, psychological condition, quality of life, self-efficacy and carers' stress by using different measurement devices.

Table (d): Measurement devices for seven aspects

Aspects	Measurement devices
(1) Physical functioning	- Five Time Sit to Stand Test - Hand Grip Power - Time Up and Go Test - Elderly Mobility Scale (EMS) - Sollerman Hand Function Test
(2) Cognitive functioning	- Mini-Mental State Examination (MMSE) - Dementia Rating Scale (DRS)
(3) Activities of daily living ability	- Barthel Index (BI)
(4) Psychological condition	- Geriatric Depression Scale (GDS)
(5) Quality of life	- Hong Kong Quality of Life Scale (HKQoL)
(6) Self-efficacy	- General Self-Efficacy Scale
(7) Carers' stress	- Carers' Strain Index

### 3.4 Methods of data analysis

Statistical analyses were done by using Statistical Package for the Social Sciences (SPSS) version 11.5. The statistical analyses adopted include:

- a. T-tests to compare the distribution of two means or proportions for the purpose of determining whether the two groups were significantly different and whether the hypothesis was correct.
- b. Comparison of means to see the differences before and after the 6-month intervention in intervention subjects, who subscribed to the new service mode of EHCCS.
- c. Comparison of means to see the differences before and after subscription to EHCCS from users of intervention group, who subscribed to the new service mode of EHCCS.

# **Chapter 4 :: Research Findings**

## 4.1 Profile of the sample

### 4.1.1 Sex

36 users were invited to the study, 10 were male and 26 were female.

	<b>Number (N)</b>	<b>Percent (%)</b>
<b>Male</b>	10	27.8
<b>Female</b>	26	72.2
<b>Total</b>	36	100

### 4.1.2 Age

The average age of users in the study was 78.2. Dividing them into different age categories, 11 users were young-olds (65 to 74), 21 users were middle olds (75 to 85) and 4 were old-olds 86 or above).

	<b>Number (N)</b>	<b>Percent (%)</b>
<b>Young-old (65 to 74)</b>	11	30.6
<b>Middle-old (75 to 85)</b>	21	58.3
<b>Old-old (86 or above)</b>	4	11.1
<b>Average age</b>	78.2	--
<b>Total</b>	36	100

### 4.1.3 Living arrangement

Most of the users were living with family members or carers.

	<b>Number (N)</b>	<b>Percent (%)</b>
<b>Living with family</b>	27	75
<b>Living with carer</b>	25	69.4

#### 4.1.4 Number of children

The number of children users bore ranged from 0 to 10. The average number of children users bore was 4.1.

	<b>Number (N)</b>	<b>Percent (%)</b>
<b>No child</b>	2	5.6
<b>1 child</b>	4	11.1
<b>2 children</b>	2	5.6
<b>3 children</b>	8	22.2
<b>4 children</b>	7	19.4
<b>5 children</b>	5	13.9
<b>6 children</b>	2	5.6
<b>7 children</b>	3	8.3
<b>8 children</b>	1	2.8
<b>9 children</b>	0	0
<b>10 children</b>	2	5.6
<b>Average no of children</b>	4.1	--
<b>Total</b>	36	100

#### 4.1.5 Education Level

The majority of users attained only primary level of education or below.

	<b>Number (N)</b>	<b>Percent (%)</b>
<b>Primary or below</b>	33	91.7
<b>Primary level</b>	1	2.8
<b>Junior high</b>	2	5.6
<b>Total</b>	36	100

#### 4.1.6 Financial Status

27 users indicated that they are under the support of Comprehensive Social Security Assistance (CSSA) Scheme.

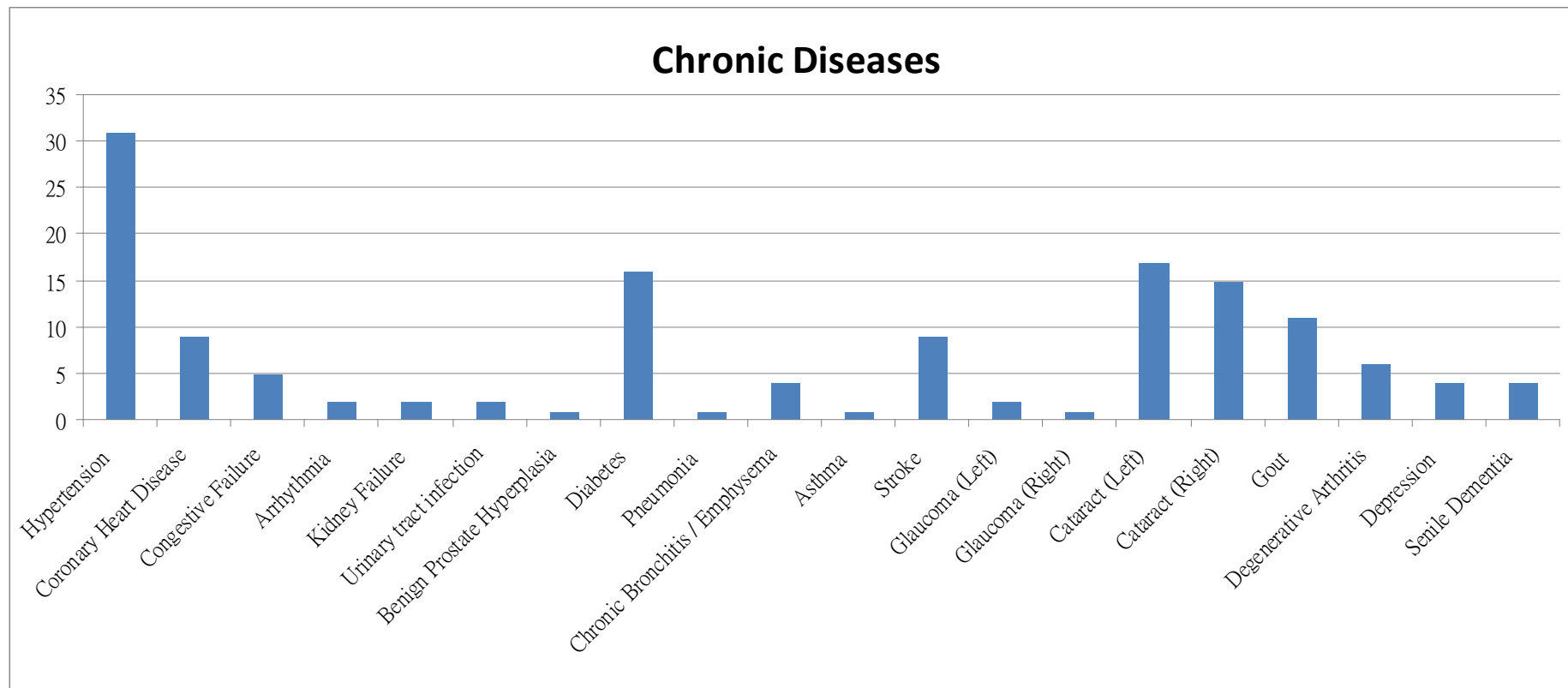
	<b>Number (N)</b>	<b>Percent (%)</b>
<b>CSSA recipient</b>	27	75
<b>Non-CSSA recipient</b>	9	25
<b>Total</b>	36	100

#### 4.1.7 Chronic Diseases

On average, the number of disease each user had was 4. The top five diseases are: hypertension (86.1%), cataract (47.2% for left eye and 41.7% for right eye), diabetes (44.4%), gout (30.6%) and coronary heart disease and stroke (25% for both).

	<b>Number (N)</b>	<b>Percent (%)</b>
<b>Hypertension</b>	31	86.1
<b>Cataract (Left)</b>	17	47.2
<b>Diabetes</b>	16	44.4
<b>Cataract (Right)</b>	15	41.7
<b>Gout</b>	11	30.6
<b>Coronary Heart Disease</b>	9	25.0
<b>Stroke</b>	9	25.0
<b>Degenerative Arthritis</b>	6	16.7
<b>Congestive Failure</b>	5	13.9
<b>Chronic Bronchitis / Emphysema</b>	4	11.1
<b>Depression</b>	4	11.1
<b>Senile Dementia</b>	4	11.1
<b>Arrhythmia</b>	2	5.6
<b>Kidney Failure</b>	2	5.6
<b>Urinary Tract Infection</b>	2	5.6
<b>Glaucoma (Left)</b>	2	5.6
<b>Benign Prostate Hyperplasia*</b>	1	2.8
<b>Pneumonia</b>	1	2.8
<b>Asthma</b>	1	2.8
<b>Glaucoma (Right)</b>	1	2.8
<b>Total Number of Diseases</b>	143	--
<b>Number of Diseases per user</b>	4.0	--





#### 4.1.8 Physical Functioning

As determined by Modified Functional Ambulation Category (MFAC) upon entry to the study, 15 users were classified as indoor walkers, 11 as outdoor walkers, 9 as supervised walkers and 1 as assisted walker.

	<b>Number (N)</b>	<b>Percent (%)</b>
<b>Assisted Walker</b>	1	2.8
<b>Supervised Walker</b>	9	25.0
<b>Indoor Walker</b>	15	41.7
<b>Outdoor Walker</b>	11	30.6
<b>Total</b>	36	100

#### 4.1.9 Cognitive Functioning

As measured by Mini-Mental State Examination (MMSE) upon entry to the study, 19 users were assessed as normal, 9 as mildly impaired, 7 as moderately impaired, and 1 as severely impaired.

	<b>Number (N)</b>	<b>Percent (%)</b>
<b>Severely Impaired (0-9)</b>	1	2.8
<b>Moderately Impaired (10-18)</b>	7	19.4
<b>Mildly Impaired (19-23)</b>	9	25.0
<b>Normal (24-30)</b>	19	52.8
<b>Total</b>	36	100

#### 4.1.10 Ability for Activities of Daily Living

As measured by Barthel Index (BI) upon entry to the study, 23 users were moderately dependent, 11 were mildly dependent, and 2 were totally independent, who had no problem carrying out most of the activities for daily living.

	<b>Number (N)</b>	<b>Percent (%)</b>
<b>Totally Dependent (0-20)</b>	0	0
<b>Severely Dependent (21-60)</b>	0	0
<b>Moderately Dependent (61-90)</b>	23	63.9
<b>Mildly Dependent (91-99)</b>	11	30.6
<b>Independent (100)</b>	2	5.6
<b>Total</b>	36	100

## 4.2 Pairing of clients

Adopting a quasi-intervention pre-and-post-test design, the study paired users of intervention group individually with users from comparison group for a more refined result. The pairing was based on 3 aspects: physical functioning, cognitive functioning, and ability for activities for daily living.

Albeit the stringent rules set forth, the pairing of intervention users to comparison users did not entirely match due to many constraints such as not having enough users to take part in the study, thus making it difficult to find an identical pair, and unexpected drop-outs from the study due to accidents, sudden deterioration in health or even death. The following part provides more details on the matching status of intervention and comparison users on the 3 aforementioned aspects.

### 4.2.1 Same/Similar banding in MFAC for physical functioning

Managers of HKFWS paired up intervention and comparison users with their bandings in MFAC, namely “Assisted Walker”, “Supervised Walker”, “Outdoor Walker” and “Outdoor Walker. The paired users must attained similar level in MFAC.

	<b>Intervention Group</b>		<b>Comparison Group</b>	
	Number (N)	Percent (%)	Number (N)	Percent (%)
<b>Assisted Walker</b>	1	5.6	0	0
<b>Supervised Walker</b>	3	16.7	6	33.3
<b>Indoor Walker</b>	8	44.4	7	38.9
<b>Outdoor Walker</b>	6	33.3	5	27.8
<b>Total</b>	18	100	18	100

#### 4.2.2 Same/Similar banding in MMSE for cognitive functioning

Managers of HKFWS paired up intervention and comparison users with their bandings in MMSE, namely “Severely Impaired” (0-9), “Moderately Impaired” (10-18), “Mildly Impaired” (19-23) and “Normal” (24-30). The paired users must attained similar level in MMSE.

	<b>Intervention Group</b>		<b>Comparison Group</b>	
	Number (N)	Percent (%)	Number (N)	Percent (%)
<b>Severely Impaired</b>	0	0	1	5.6
<b>Moderately Impaired</b>	6	33.3	1	5.6
<b>Mildly Impaired</b>	3	16.7	6	33.3
<b>Normal</b>	9	50.0	10	55.6
<b>Total</b>	18	100	18	100

#### 4.2.3 Same/Similar banding in BI for ability in activities for daily living

Managers of HKFWS paired up intervention and comparison users with their bandings in BI, namely “Totally Dependent” (0-20), “Severely Dependent” (21-60), “Moderately Dependent” (61-90), “Mildly Dependent” (91-99) and “Independent” (100). The paired users must attained similar level in BI.

	<b>Intervention Group</b>		<b>Comparison Group</b>	
	Number (N)	Percent (%)	Number (N)	Percent (%)
<b>Totally Dependent</b>	0	0	0	0
<b>Severely Dependent</b>	0	0	0	0
<b>Moderately Dependent</b>	10	55.6	13	72.2
<b>Mildly Dependent</b>	6	33.3	5	27.8
<b>Independent</b>	2	11.1	0	0
<b>Total</b>	18	100	18	100

#### 4.3 Testing the hypotheses of the new mode of EHCCS with day care element

The hypotheses of the new mode of EHCCS with day care element were:

- Improvement in physical functioning , which included functionally mobility, hand dexterity and general physical well-being. The improvement would be

reflected in the fast time in Five Time Sit to Stand Test and Time Get Up and Go Test, high scores in Hand Grip Strength Test, Sollerman Hand Function Test and Elderly Mobility Test.

- Improvement in cognitive functioning, which included intelligence, memory and logical thinking. The improvement would be reflected in the higher scores in Dementia Rating Scale (DRS).
- Improvement in daily living skills, which would be reflected in the high scores in Barthel Index (BI).
- Improvement in psychological well-being, such as mental disorder and satisfaction toward life in the aspects of subjective well-being, health, interpersonal relations, achievement-recognition, finance and living condition. The improvement would be reflected in the higher score in Geriatric Depression Scale (GDS) and Quality of Life Scale (QOL).
- Improvement in self-efficacy, which included self motivation and confidence. The improvement would be reflected in the higher scores in General Self-Efficacy Scale.
- Improvement in carers' stress level. The improvement would be reflected in the lower scores in Carers' Strain Index.

Paired t-test is used to compare the distribution of two scores (i.e. results from pre-test and post-test) for the purpose of determining the validity of the hypotheses. Compared with independent t-test, the method possesses the advantage of being more powerful as each user was used as his or her own comparison, thus individual differences can be partialled out, which means the influence of a factor or a variable during statistical analysis could be eliminated or removed.

#### 4.3.1 Physical functioning

Paired t-test was used to analyze the new service mode of EHCCS in improving the physical functioning of users. The difference between the scores in pre-test and post-test will be pinpointed, and follows, the significant level of the new mode in improving the captioned aspect will be explained.

#### 4.3.1.1 Five Time Sit To Stand Test

##### a. Mean difference

Intervention subjects took longer time (i.e. 3.3 seconds more) to complete the test than they were 6 months ago before the intervention, which could be understood as a deterioration of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

(N=18)	Mean	S.D.
Pre-test	38.8	54.3
Post-test	42.1	57.5
Mean Difference	+3.3	--

##### b. Paired t-test result

Users used longer time to complete the task after the intervention, which implied deterioration in condition. Therefore, the hypothesis was instantly rejected.

The result of the paired t-test will explain if it was a significant effect of the intervention. The significant level (p-value) stood at 0.297, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other word, the new mode of EHCCS was proved not effective in improving user's condition under the current scope of the study, the changes might just happen by chance.

Mean Difference	S.D	Sig. (2-tailed)
+3.3	13.1	0.297

#### 4.3.1.2 Time Get Up And Go Test

##### a. Mean difference

Intervention subjects took longer time (i.e. 1.2 seconds more) to complete the test after 6 months of treatment, which could be understood as a deterioration of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

N=18	Mean	S.D.
Pre-test	37.2	23.8
Post-test	38.4	30.1
Mean Difference	+1.2	--

##### b. Paired t-test result

Users used longer time to complete the task after the intervention, which implied deterioration in condition. [Therefore, the hypothesis was instantly rejected.](#)

[The result of the paired t-test will explain if it was a significant effect of the intervention.](#) The significant level (p-value) stood at 0.644, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the new mode of EHCCS was proved not effective in improving user's condition under the current scope of the study; [the changes might just happen by chance.](#)

Mean Difference	S.D	Sig. (2-tailed)
+1.2	11.0	0.644

#### 4.3.1.3 Hand Grip Strength Test Result

a. Mean difference

Intervention subjects recorded to have stronger hand grip strengths (i.e. 2.4kg more) after 6 months of treatment, which could be understood as an improvement of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

N=18	Mean	S.D.
Pre-test	11.8	5.5
Post-test	14.2	5.9
Mean Difference	+2.4	--

b. Paired t-test result

Users were recorded to possess better hand grip strength after the intervention, which implied improvement in condition. On the surface of it, the result went in the direction of the hypothesized outcome.

The result of the paired t-test will explain if it was a significant effect of the intervention. The significant level (p-value) stood at 0.028, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the new mode of EHCCS was proved effective in improving users' hand grip power under the current scope of the study; the improvement occurred because of the intervention

Mean Difference	S.D	Sig. (2-tailed)
+2.4	4.2	0.028



#### 4.3.1.4 Sollerman Hand Function Test

##### a. Mean difference

Intervention subjects recorded to have lower score (i.e. 0.4 point less) after 6 months of treatment, which could be understood as a deterioration of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

N=18	Mean	S.D.
Pre-test	78.3	6.1
Post-test	77.9	6.2
Mean Difference	-0.4	--

##### b. Paired t-test result

Users were recorded to possess a weaker hand functioning after the intervention, which implied deterioration in condition. **Therefore, the hypothesis was instantly rejected.**

**The result of the paired t-test will explain if it was a significant effect of the intervention.** The significant level (p-value) stood at 0.331, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the new mode of EHCCS was proved not effective in improving user's condition under the current scope of the study; **the changes might just happen by chance.**

Mean Difference	S.D	Sig. (2-tailed)
-0.4	1.7	0.331

#### 4.3.1.5 Elderly Mobility Score

##### a. Mean difference

Intervention subjects recorded to have lower score (i.e. 0.4 point less) after 6 months of treatment, which could be understood as an deterioration of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

N=18	Mean	S.D.
Pre-test	15.3	2.3
Post-test	15.6	3.0
Mean Difference	+0.2	--

##### b. Paired t-test result

Users scored higher in mobility test after the intervention, which implied improvement in condition. On the surface of it, the result went in the direction of the hypothesized outcome.

The result of the paired t-test will explain if it was a significant effect of the intervention. The significant level (p-value) stood at 0.701, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the new mode of EHCCS was proved not effective in improving user's condition under the current scope of the study; the changes might just happen by chance.

Mean Difference	S.D	Sig. (2-tailed)
+0.2	2.4	0.701

Summing up, the hypothesis of the new mode of EHCCS with day care element in improving users' physical functioning was mostly rejected, except in the area of

enhancing hand grip strength.

#### 4.3.2 Cognitive Functioning

Paired t-test was used to analyze the new service mode of EHCCS in improving the cognitive functioning of users. The difference between the scores in pre-test and post-test will be pinpointed, and follows, the significant level of the new mode in improving the captioned aspect will be explained.

##### 4.3.2.1 Dementia Rating Scale

###### a. Mean difference

Intervention subjects scored higher (i.e. 0.6 point higher) after 6 months of intervention, which could be understood as an improvement of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

(N=18)	Mean	S.D.
Pre-test	114.2	18.6
Post-test	114.8	18.6
Mean Difference	+0.6	--

###### b. Paired t-test result

Users showed improvement in cognitive ability. On the surface of it, the result went in the direction of the hypothesized outcome.

The result of the paired t-test will explain if it was a significant effect of the intervention. The significant level (p-value) of the change, however, stood at 0.582, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other word, the new mode of EHCCS was proved not effective in improving user's

condition under the current scope of the study; **the changes might just happen by chance.**

Mean Difference	S.D	Sig. (2-tailed)
+0.6	5.0	0.582

Summing up, the hypothesis of the new mode of EHCCS with day care element in improving users’ cognitive function, including intelligence, memory and logical thinking was entirely rejected.

### 4.3.3 Ability for Activities for Daily Living

Paired t-test was used to analyze the new service mode of EHCCS in improving users’ ability for activities for daily living. The difference between the scores in pre-test and post-test will be pinpointed, and follows, the significant level of the new mode in improving the captioned aspect will be explained.

#### 4.3.3.1 Barthel Index

##### a. Mean difference

Intervention subjects scored lower (i.e. 2 points lower) after 6 months of intervention, which could be understood as a deterioration of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

(N=18)	Mean	S.D.
Pre-test	89.28	7.9
Post-test	87.28	10.6
Mean Difference	-2	--

##### b. Paired t-test result

Users were recorded to have a weaker ability in handling activities for daily living after the intervention, **which implied deterioration in condition. Therefore, the hypothesis**

was instantly rejected.

The result of the paired t-test will explain if it was a significant effect of the intervention. The significant level (p-value) stood at 0.254, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other word, the new mode of EHCCS was proved not effective in improving user's condition under the current scope of the study; the changes might just happen by chance.

Mean Difference	S.D	Sig. (2-tailed)
-2	7.2	0.254

Summing up, the hypothesis of the new mode of EHCCS with day care element in improving users' daily living skills and abilities was entirely rejected.

#### 4.3.4 Psychological well-being

Paired t-test was used to analyze the new service mode of EHCCS in improving the psychological well-being of users. The difference between the scores in pre-test and post-test will be pinpointed, and follows, the significant level of the new mode in improving the captioned aspect will be explained.

##### 4.3.4.1 Geriatric Depression Scale

###### a. Mean difference

Intervention subjects scored lower (i.e. 0.9 point lower) after 6 months of intervention, which could be understood as an improvement of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

(N=18)	Mean	S.D.
Pre-test	6.3	4.0
Post-test	5.4	2.6
Mean Difference	-0.9	--

b. Paired t-test result

Users scored lower in the test, thus happier after 6 months of intervention. On the surface of it, the result went in the direction of the hypothesized outcome.

The result of the paired t-test will explain if it was a significant effect of the intervention. The significant level (p-value) , however, stood at 0.284, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other word, the new mode of EHCCS was proved not effective in improving user’s condition under the current scope of the study; the changes might just happen by chance.

Mean Difference	S.D	Sig. (2-tailed)
-0.9	3.4	0.284

4.3.4.2 Hong Kong Quality of Life for the Elderly Scale

a. Mean difference

Intervention subjects scored higher (i.e. 0.7 point higher) after 6 months of intervention, which could be understood as an improvement of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

(N=18)	Mean	S.D.
Pre-test	16.3	2.4
Post-test	17.0	1.9
Mean Difference	+0.7	--

b. Paired t-test result

Users scored higher in the test after the intervention, which implied users were more satisfied with lives after 6 months of intervention. On the surface of it, the result went in the direction of the hypnotized outcome.

The significant level (p-value), however, stood at 0.28, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other word, the new mode of EHCCS was proved not effective in improving user's condition under the current scope of the study; [the changes might just happen by chance.](#)

Mean Difference	S.D	Sig. (2-tailed)
+0.7	2.5	0.228

Summing up, the hypothesis of the new mode of EHCCS with day care element in improving users' psychological welling was entirely rejected.

#### 4.3.5 Self Efficacy

Paired t-test was used to analyze the new service mode of EHCCS in improving the self efficacy level of users. The difference between the scores in pre-test and post-test will be pinpointed, and follows, the significant level of the new mode in improving the captioned aspect will be explained.

#### 4.3.5.1 General Self-Efficacy Scale

##### a. Mean difference

Intervention subjects scored higher (i.e. 0.2 point higher) after 6 months of intervention, which could be understood as an improvement of condition. The result of the paired t-test will explain if it was a significant effect of the intervention.

(N=18)	Mean	S.D.
Pre-test	27.9	6.3
Post-test	28.1	5.1
Mean Difference	+0.2	--

##### b. Paired t-test result

Users scored higher in the test after the intervention, which implied users were more driven, motivated and confident after 6 months of intervention. On the surface of it, the result went in the direction of the hypnotized outcome.

The result of the paired t-test will explain if it was a significant effect of the intervention. However, the significant level (p-value) stood at 0.916, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other word, the new mode of EHCCS was proved not effective in improving user's condition under the current scope of the study; the changes might just happen by chance.

Mean Difference	S.D	Sig. (2-tailed)
+0.2	6.6	0.916

Summing up, the hypothesis of the new mode of EHCCS with day care element in enhancing users' self-efficacy level was clearly rejected.



#### 4.3.6 Carers' Stress

Paired t-test was used to analyze the new service mode of EHCCS in alleviating carers' stress. The difference between the scores in pre-test and post-test will be pinpointed, and follows, the significant level of the new mode in improving the captioned aspect will be explained.

##### 4.3.6.1 Carer's Strain Index

###### a. Mean difference

Carers of intervention subjects rated their stress level lower (i.e. 0.4 point lower) after 6 months of intervention, which could be understood as an improvement on carers' stress level. The result of the paired t-test will explain if it was a significant effect of the intervention.

(N=18)	Mean	S.D.
Pre-test	6.2	6.3
Post-test	5.8	5.1
Mean Difference	-0.4	--

###### b. Paired t-test result

Carers rated lower in the survey after 6 months of intervention on users, which implied carers felt less stressful after the intervention. On the surface of it, the result went in the direction of the hypothesized outcome.

The result of the paired t-test will explain if it was a significant effect of the intervention. The significant level (p-value) stood at 0.540, given the hypothesis behind, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other word, the new mode of EHCCS was proved not effective in improving carers' stress under the current scope of the study; the changes might just happen by chance.

Mean Difference	S.D	Sig. (2-tailed)
-0.4	0.6	0.540

Summing up, the hypothesis of the new mode of EHCCS with day care element in alleviating carers' stress was clearly rejected.

#### 4.4 The performance of existing mode of EHCCS against the hypotheses

Another 18 users were selected to participate in the study as comparison group. Users in the comparison were used as a standard for comparison. Under quasi-intervention design, subjects are divided into two group – “intervention group” and “comparison group”. The intervention subjects are given the intervention treatment under the study, while the comparison subjects are given either the standard treatment (positive comparison) or a placebo (negative comparison). At the end of the study, the results of the two groups are compared.

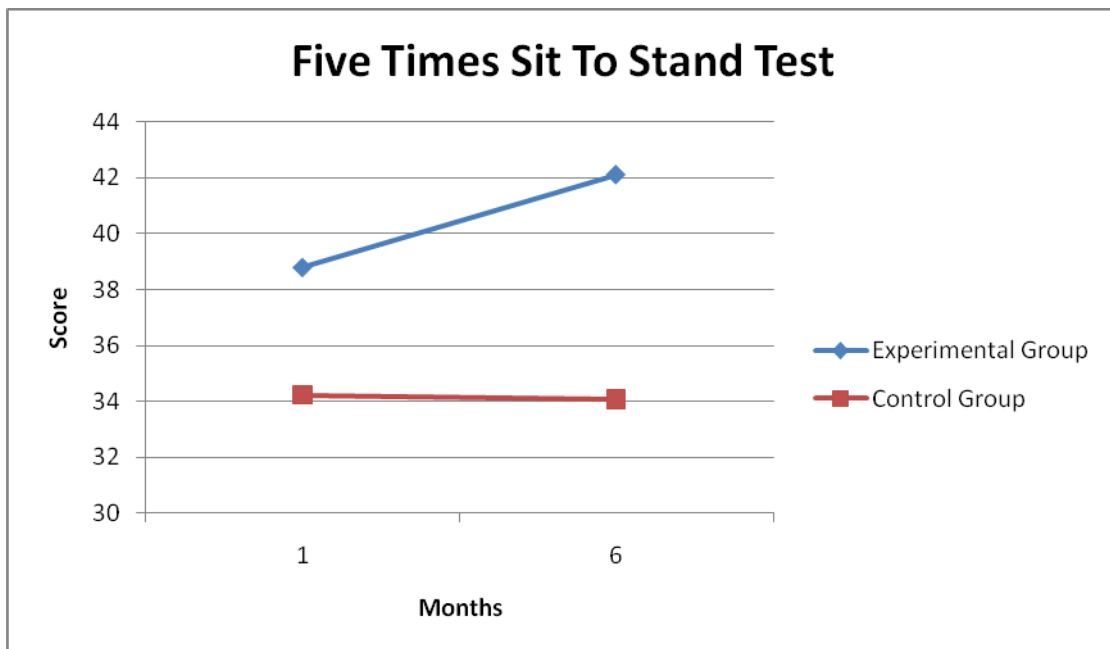
Having followed the principle, our study divided EHCCS users into two groups – "intervention group" and a "comparison group". The intervention group was given the intervention treatment (i.e. new service mode with day care element) while the comparison group was given a standard treatment (i.e. existing service mode that confined to home-care services) instead of a placebo. The placebo would demonstrate a base-line result obtained when a test does not produce a measurable positive result and would be treated as a background value to be subtracted from the results of intervention or positive comparison samples. However, arrangement of such goes against the work ethics and service guarantee of the service provider. Therefore, under this set up, the comparison group would confirm the basic condition of the experiment (i.e. EHCCS) and would be able to produce a positive result ideally, even if none of the actual intervention user managed to produce a positive result.

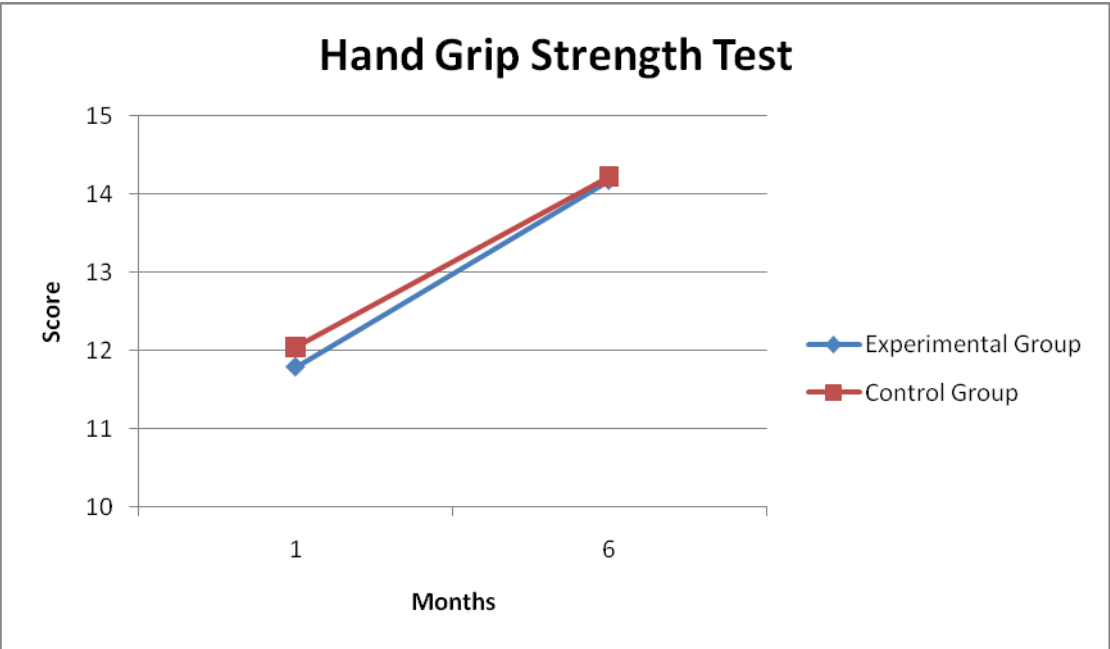
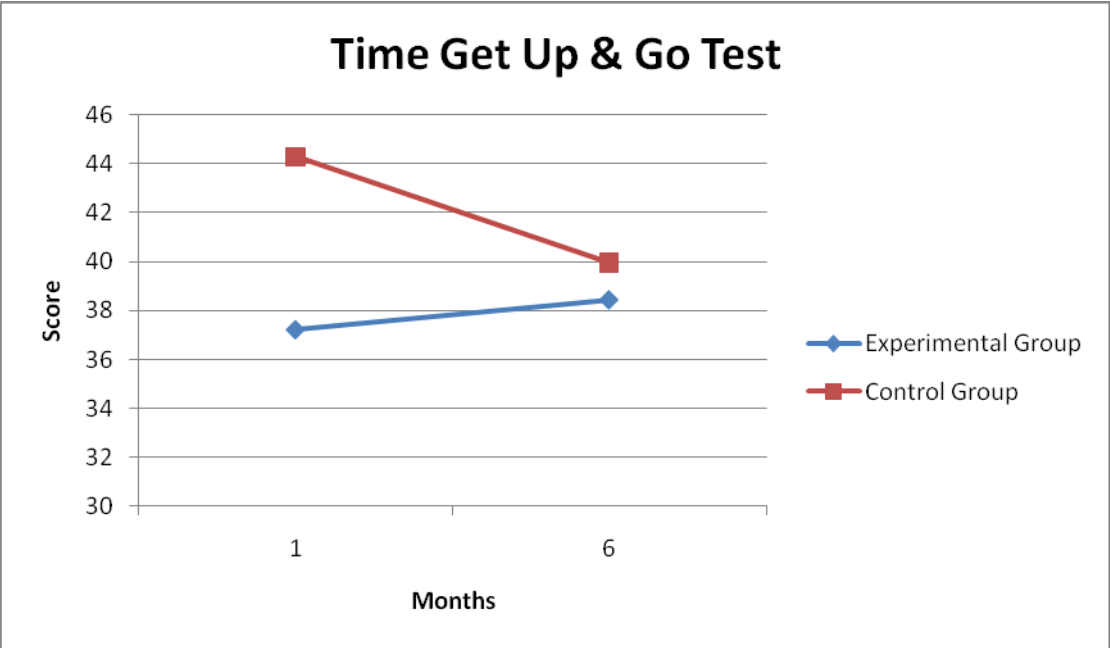
##### 4.4.1 Physical Functioning

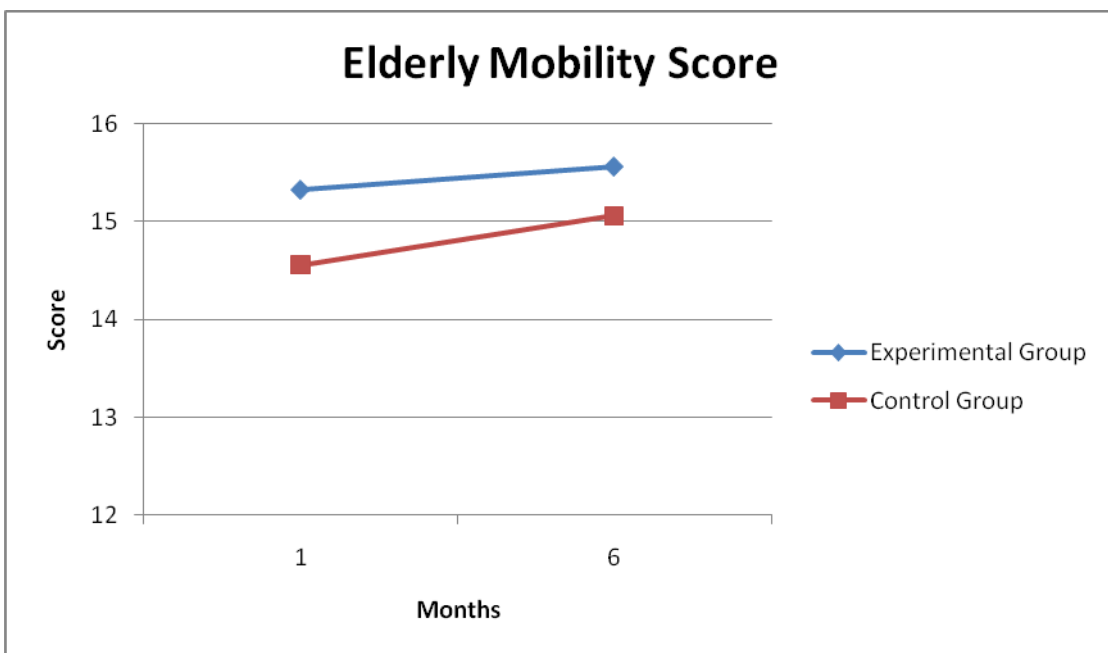
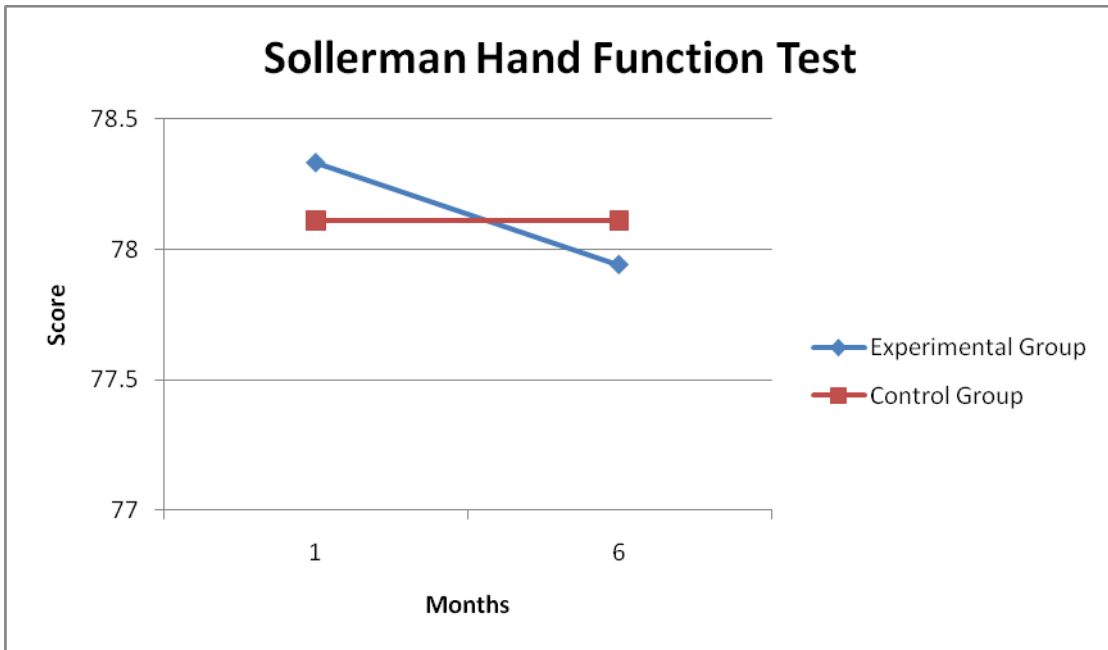
The same tests were conducted on users of comparison group at the same time interval (i.e. 6 months). All results, except that of Sollerman Hand Function Test, went in the direction of desirable outcomes.

However, the p-value ranged from 0.057 to 0.963, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the existing mode of EHCCS was proved not effective in improving the physical functioning of users under the current scope of the study; [the changes might just happen by chance.](#)

	Group	Mean Difference	S.D	Sig. (2-tailed)
Five Time Sit To Stand Test	E	+3.3	13.1	0.297
	C	-0.2	13.3	0.963
Time Get Up and Go Test	E	+1.2	11.0	0.644
	C	-4.3	9.0	0.057
Hand Grip Strength Test	E	+2.4	4.2	0.28
	C	+2.2	4.7	0.66
Sollermen Hand Function Test	E	-4.0	1.7	0.331
	C	0	0.3	1.000
Elderly Mobility Test	E	+0.2	2.4	0.701
	C	+0.5	3.0	0.488





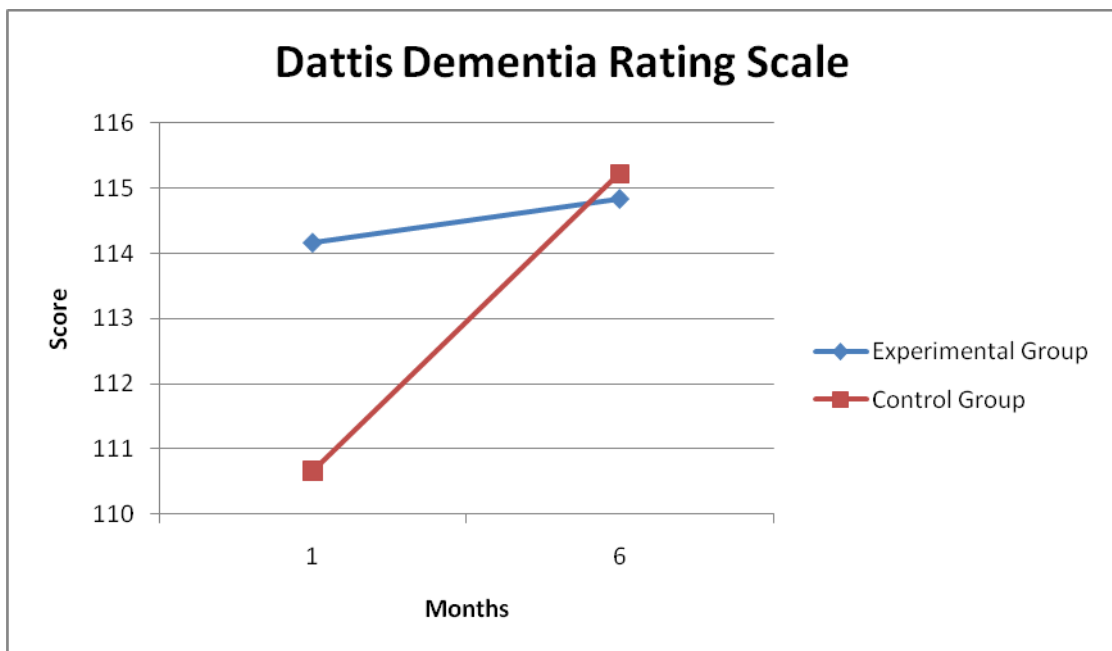


#### 4.4.2 Cognitive Functioning

The same test was conducted on users of comparison group at the same time interval (i.e. 6 months). The result, similar to that of intervention group, went in the direction of desirable outcomes, even with a bigger improvement in terms of scores.

However, the p-value stood at 0.095, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the existing mode of EHCCS was proved not effective in improving the cognitive functioning of users under the current scope of the study; [the changes might just happen by chance.](#)

	Group	Mean Difference	S.D	Sig. (2-tailed)
Dementia Rating Scale	E	+0.6	5.0	0.582
	C	+4.6	10.9	0.095



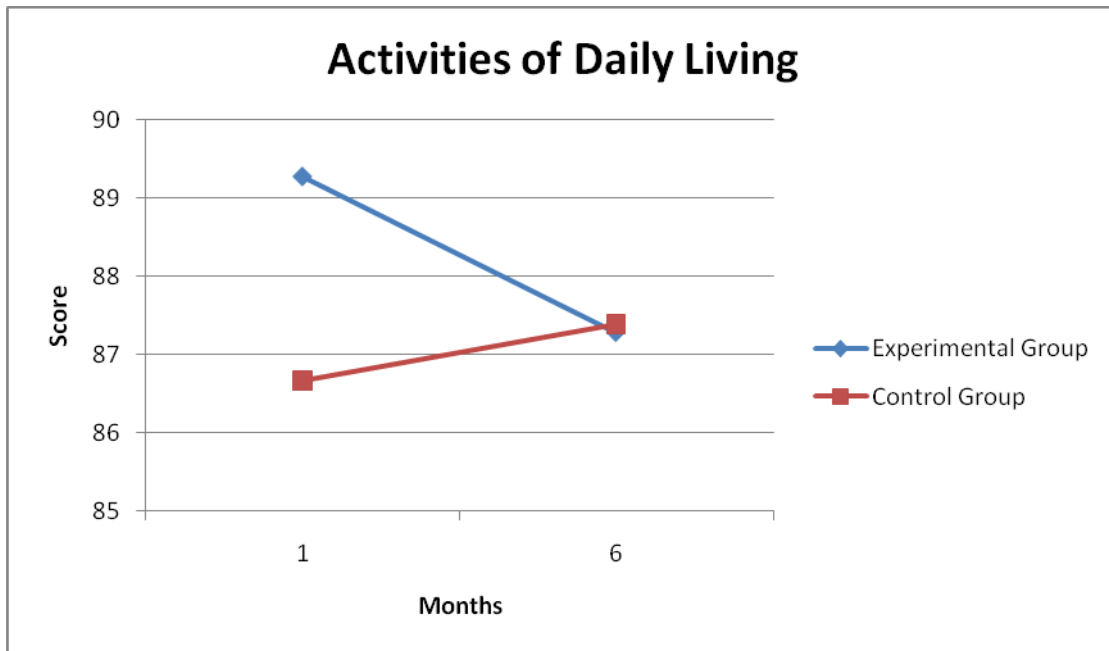
#### 4.4.3 Ability for Activities for Daily Living

The same test was conducted on users of comparison group at the same time interval (i.e. 6 months). The result, unlike the deterioration showed in intervention group, went in the direction of desirable outcome, though the increase was only 0.7 point.

The p-value stood at 0.286, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the existing mode of EHCCS was proved not effective in improving the users' ability for activities for daily living

under the current scope of the study; the changes might just happen by chance.

	Group	Mean Difference	S.D	Sig. (2-tailed)
Barthel Index	E	-2.0	7.187	0.254
	C	+0.7	2.782	0.286

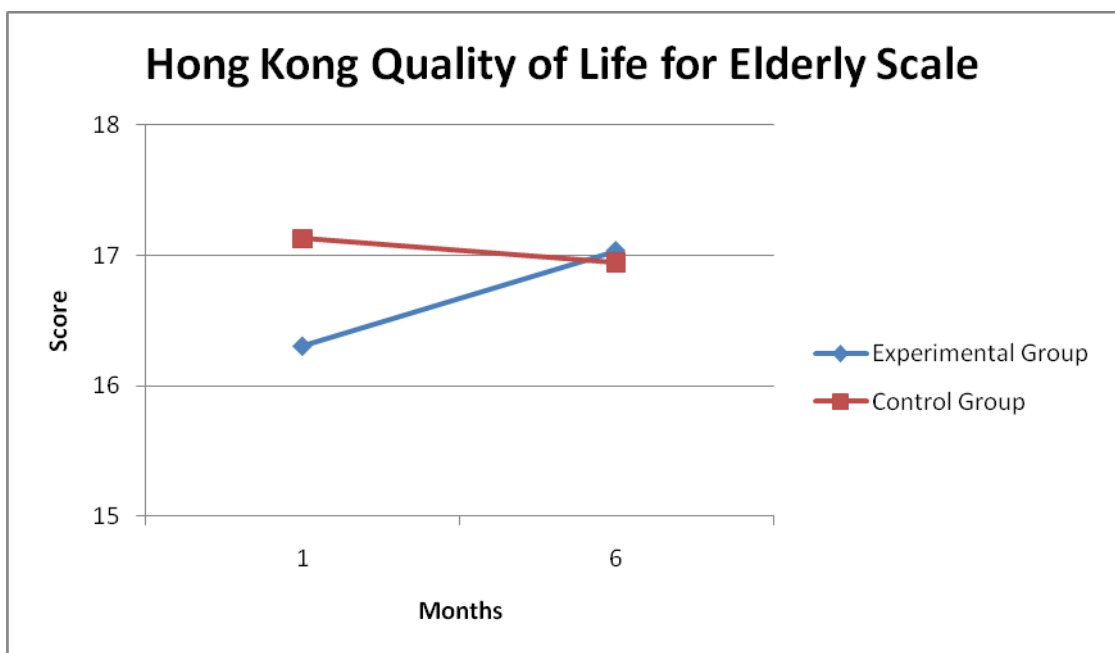
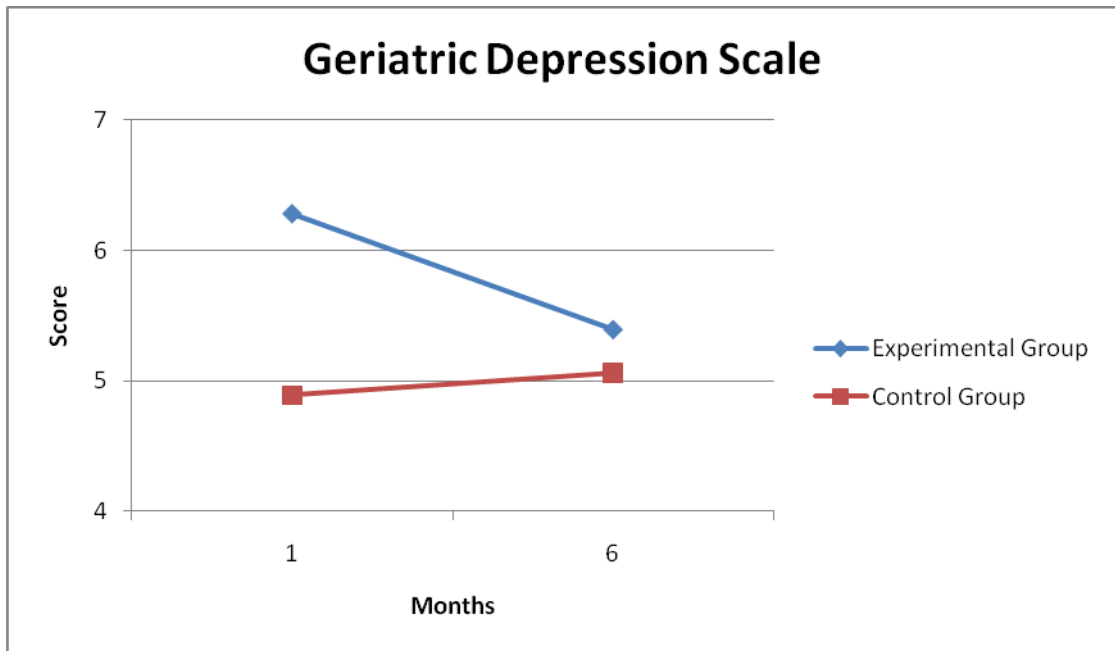


#### 4.4.4 Psychological Well-Being

The same tests were conducted on users of comparison group at the same time interval (i.e. 6 months). The result of Geriatrics Depression Scale, unlike the deterioration showed in intervention group, went in the direction of desirable outcome, though the increase was slight; and the result of Hong Kong Quality of Life for Elderly Scale showed deterioration, as opposed to the desirable outcome.

The p-values were 0.740 and 0.776, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the existing mode of EHCCS was proved not effective in enhancing users' psychological well-being under the current scope of the study; the changes might just happen by chance.

	Group	Mean Difference	S.D	Sig. (2-tailed)
Geriatrics Depression Scale	E	-0.9	3.4	0.284
	C	+0.2	2.1	0.740
Hong Kong Quality of Life for Elderly Scale	E	+0.7	2.5	0.228
	C	-0.2	2.6	0.776



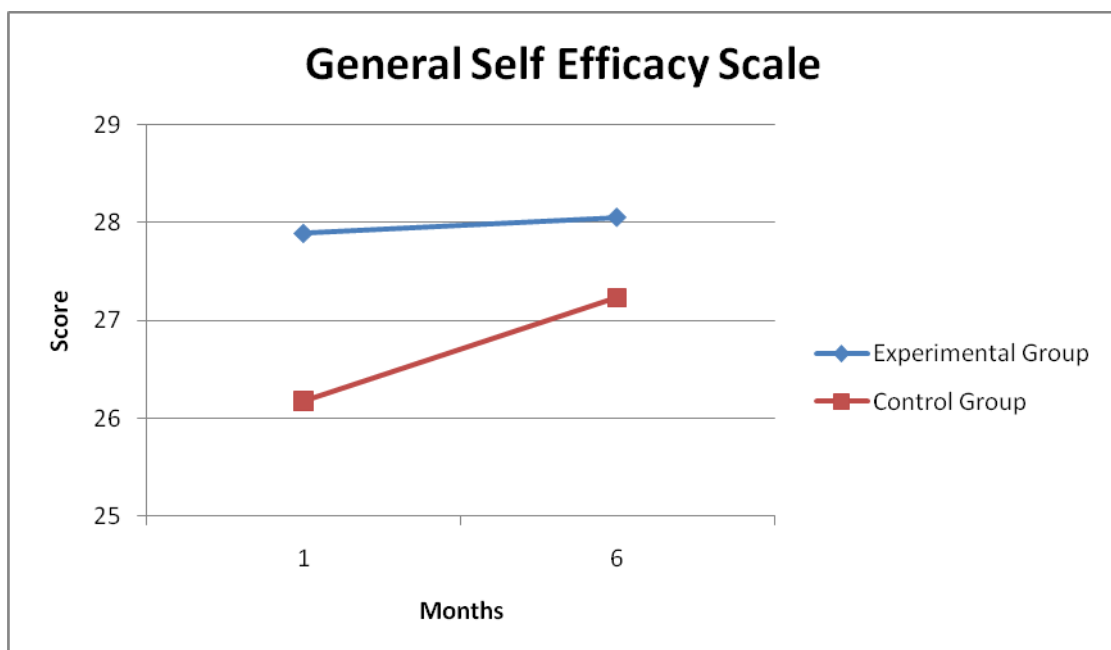


#### 4.4.5 Self-Efficacy

The same test was conducted on users of comparison group at the same time interval (i.e. 6 months). The result, similar to that of intervention group, went in the direction of desirable outcome, even marked a bigger improvement of 1.1 points.

However, the p-value stood at 0.640, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the existing mode of EHCCS was proved not effective in improving users' self efficacy level under the current scope of the study; [the changes might just happen by chance.](#)

	Group	Mean Difference	S.D	Sig. (2-tailed)
General Self-Efficacy Scale	E	+0.2	6.6	0.916
	C	+1.1	9.1	0.640



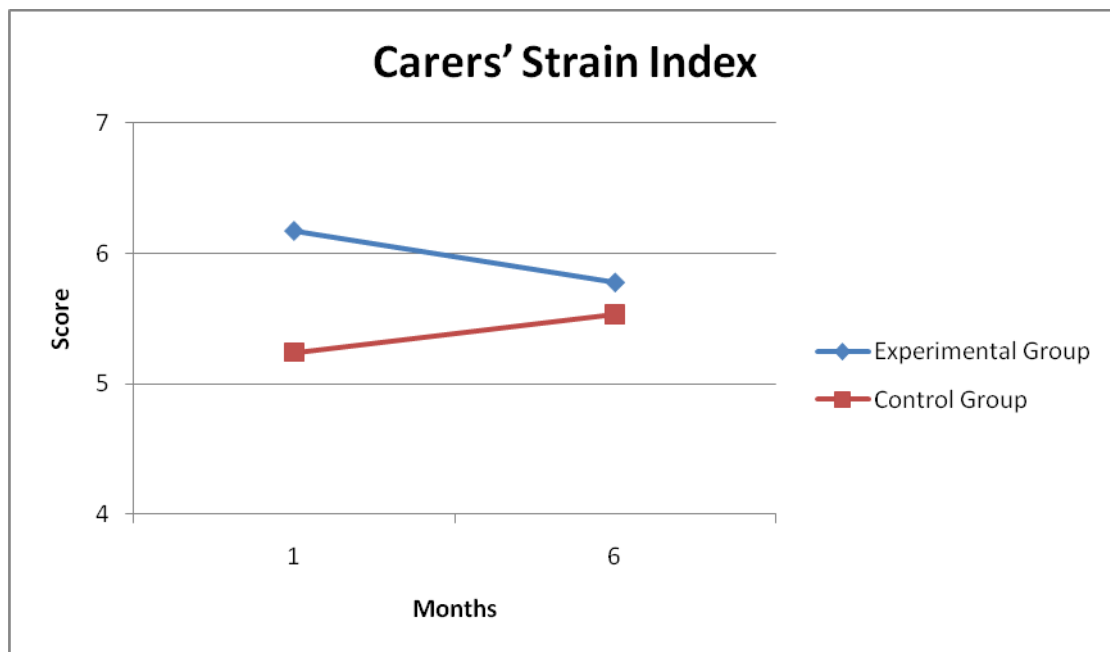
#### 4.4.6 Carers' Stress

The same test was conducted on carers of users from comparison group at the same time interval (i.e. 6 months). The result, unlike the improvement

indicated in intervention group, showed deterioration, which meant carers found themselves more stressful than they were 6 months ago, which went against the ideal of EHCCS.

The p-value stood at 0.772, for which 0.05 is the standard level of significance that universally used to justify a claim of a statistically significant effect. In other words, the existing mode of EHCCS was proved not effective in alleviating carers' stress under the current scope of the study; [the changes might just happen by chance.](#)

	Group	Mean Difference	S.D	Sig. (2-tailed)
Carers' Strain Index	E	-0.4	2.6	0.540
	C	+0.3	4.1	0.772



#### 4.5 Limitations

Following the principle of positive comparison (i.e. comparison group), the comparison group would be able to confirm the basic conditions of the experiment (i.e. EHCCS). At least some improvements should be detected in areas of physical, cognitive, ability for activities for daily living and carers' stress level since these areas were being taken care of in the existing mode of EHCCS. As for the areas of psychological well-being, and self efficacy, it was reasonable to record little or no

improvement since these were newly added psycho-social values of the new mode of service, for which the existing mode users were not under any influence of improvement.

The lack of significant effect of both the existing and new service mode might limit by the following constraints:

#### 4.5.1 Poor health of elders

Elders admitted to EHCCS are mostly frail and old, who suffer from chronic illness due to a wide range of medical and surgical problems, which leads to moderate levels of disability. This was also reflected in the profile of the users included in the study. It is also for this reason, EHCCS came into being, to assist and facilitate elders of such condition to continue to reside in the community. Given the already very poor health condition and vitality of them, should the intervention manage to maintain at a level, it is already a blessing and massive improvement or a total restoration is literally not possible.

#### 4.5.2 Too short the time for significant changes

The time period for the experiment was 6 months, albeit users of intervention group received treatment quite frequently, on a weekly basis, the time for the treatment to bring a significant improvement in elders might be a goal too aggressive, and the improvement in 6-month time might not be measurable given the condition of users.

#### 4.5.3 The unexpected happened

There were unexpected factors, mostly of environment, that caused hindrance to the progress of the study such as the 2-week suspension of service due to swine flu. The influence was not limit to those 2 weeks, elders, on the whole, became more reluctant to come to center when swine flu devastated the territory, while its effect to the study result remained unknown. The unexpected also happened to elders, such as accident, fall, sickness or even death, the effect to the study was tremendous, it caused massive slips in test scores, missing data as elders were not able to complete tasks given, or, the worse, drop out of the study.

# **Chapter 5 :: Conclusion and Recommendations**

## 5.1 Conclusion

HKFWS based on the existing mode of service of EHCCS and proposed a new mode with the addition of group rehabilitation component (details of the two modes of services are provided in Chapter 3), aimed to further enhance clients' levels in physical functioning, cognitive functioning, ability in carrying out activities of daily living, psychological condition, quality of life, social engagement and self-efficacy. The specific objectives of the research are:

- (1) To validate the effectiveness of the new service mode of EHCCS in maintaining and improving condition in the aforementioned aspects; and
- (2) To compare the effectiveness of the new service mode of EHCCS with the existing service mode of EHCCS in maintaining and improving condition in the aforementioned aspects.

Using the data collected from 18 EHCCS users who used the new service mode of service for 6 months for a paired t-test analysis, the results indicated that the new service mode was only effective in enhancing user's hand grip strength under the realm of physical functioning, while its effects to other aspects were to be verified. Analysis using paired t-test was done on users who were provided EHCCS of existing service mode. Although improvements in score values were recorded in most of the tests, but the results were tested not the significant effect of the intervention and were likely to occur by chance. The lack of significant effect in both existing and new service mode of EHCCS might under the influence of the constraints of the study such as poor health of elders, too short the time for significant improvement and other unexpected factors such as outbreak of diseases, accident or sickness of elders and etc, all of which combined have limited the results of the study.

The dataset lacks in length to determine which service mode of EHCCS as there is one condition to satisfy before the comparison could take place. The condition requires the interventions (i.e. new service mode and existing service mode) to prove its effect in delivering the changes or the hypothesized outcomes and effects to the users, which means, the causal relationship between the interventions and the changes in scores have to be verified, so to make a sound and just comparison of referential values.

The lack of significant effect in both existing and new service mode of EHCCS however pointed us back to evaluate the process and quality of the intervention such as how the intervention was organized and structured in the real setting? How the intervention was implemented in real setting and in different centers and by different workers? Did the desirable outcomes get translated into the activities and into workers who conducted the session? Were there any other factors that affected the result? To answer these questions, 2 observations were conducted in May 2010 at two of HKFWS service centers where the new service mode was exercised for the purpose of scrutinizing the implementation of intervention. These are the possible problems observed:

(1) Implementation were not standardized

The HKFWS service team has produced a brief plan for application of new service mode at two service centers; it outlined the division of time and tasks for different areas of work and manpower allocation during the 5-hour session. However, specific goals, expected outcomes were not clearly stated, and leaving much room for workers' own interpretation in application.

(2) Not adhering to the plan for implementation

The brief plan was produced to guide the implementation of intervention. However, from our observation, workers happened to substituted parts of the intervention as he/she thought fit, such as replacing part of the session with an outing to a monumental place, while the goals for the replaced part was not rearticulated in the outing, and the outing also took up too much time, which was at the expense of other parts of the entire intervention.

(3) Workers were not clearly orientated

The sessions were conducted almost on an one-on-one basis, apart from being too costly as opposed to effectiveness (more to it, the extra costs on escort service was not calculated yet), staff involved included professionals (i.e. RNs, PTs, OTs, RSWs), and also quite a number of program workers and health care assistants from escort to service provision. The latter not only required the professionals to transfer necessary skills and knowledge to conduct the session (for which they showed a high level of energy and efficiency), but also a clear orientation of the ideals behind the research such as the elements added, how

these element could be translated into actions, and how these actions bring about the desirable outcomes. There happened an occasion that workers kept talking to the elders to keep him/her occupied and happy, instead of helping elders and elders build up friendship and bonding among themselves with the vision of an improvement on social life.

## 5.2 Recommendations

Prior to the commencement of the study, both the consultancy and HKFWS acknowledged that the study is truly an experiment, which has never been trialed out and evaluated before. The study was an exploration of many different possibilities that could bring forth by the new service mode. Notwithstanding the constraints of the study, it is no doubt in the right direction of elderly service development trend in Hong Kong and articulating the priorities to facilitate elders to continue to live at home and age in the community. Here are merits of the new service mode:

### (1) Homely and wholesome environment

The centers provided a warm family style communal place, airy and clean, with the right amount of space and sufficient natural light, operated by teams of committed workers. Being adjacent to user's homes, the service center provides clinical care within a rehabilitative social model, i.e. care in the community and familiar neighborhood, these would increase both users and workers sense of belongings for better compliance to treatment, thus results.

### (2) Multidisciplinary input and supervision

With the support of a multidisciplinary team, consisting of nurses, social workers, physiotherapists, occupational therapists, physicians and other health care professionals, the design enables more direct input and supervision on users in one session as compared to the existing service mode, which are mostly home-based. The approach allow early identification of problem

### (3) Small group size for more interaction

The size of group ranged from 8 to 10 persons. This encourages more social interaction between user-and-worker and user-and-user and more professional attention could be given to users, as contrasted with the group size (at least 25

persons at once) at Day Care Center

(4) Users get the best of two

The new service mode composed of both center-based treatment and home-based treatment, for which users could benefit from both treatments. In service center, users took advantage of the health and social care facilities and services, as commonly seen are orientation, empowerment, counseling, training, and interest-raising services. Whereas the equipments and facilities, which cannot be installed at home, could help promote users' functional ability. These could facilitate users' physical rehabilitation instead of having to spend long hours in Day Care Center, while users could still benefit from the individualized treatments that tailor-made with reference to their real living environments.

(5) Encourage family participation

Caregivers and family members of users were welcome to accompany users to treatment, to help users better adapt to the new service mode and carers and family members were better informed about users' condition and progress and users would be better taken care of when at home. The added family perspective echoed with administration's welfare policy and service planning that family is a fundamental social institution that provides essential nurture and support for individuals.

However, there are areas of the intervention and the overall service delivery have to be refined, we recommend HKFWS to continue to work on the following areas:

- Strengthen the brief plan of intervention with designated goals and achievable expected outcomes;
- Develop a protocol that detailed the implementation (i.e. precise means and steps to follow for application) of the new service mode;
- Develop training kit for frontline staff for training purpose (i.e. program workers and health care assistants);



- Develop a scientific, comprehensive evaluation mechanism that takes into account both users' feedback and provider self-review and also consider HKFWS features and the needs of individual districts in service provision.
- Control cost by training up low-level staff to deliver professionals' (PTs, OTs, RNs) tasks.